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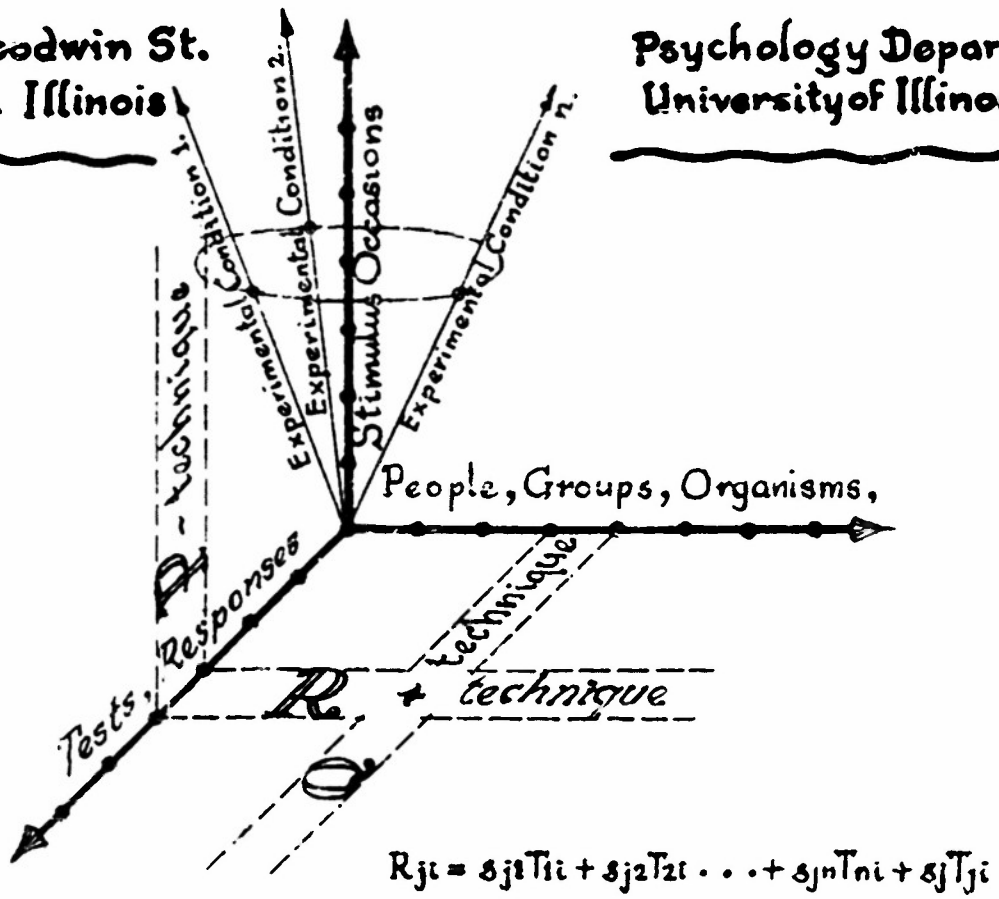

FOUR FORMULAE FOR SELECTING LEADERS

ON THE BASIS OF PERSONALITY.

by

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Four Formulae for Selecting Leaders on the Basis of Personality.

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1. Two concepts of Leadership and Leadership Measurement

Although the literature on leadership measurement and selection is considerable (1, 12, 13, 14, 15, 16, 17) it cannot be denied that psychologists and administrators charged with selecting people to fill pre-established positions of leadership are currently disappointed with the results. As a consequence, the psychologists are turning toward other conceptualizations, or are emphasizing situational determinants, as in the work of Gibb (12), while the selection of leaders continues to be based largely upon such things as school marks, amount of experience and other vaguely defined rules of thumb.

The failure of research to lead to either good theoretical generalizations or to effective applied work arises, in the opinion of the present writers, from the lack of meaningfulness, validity, and relevance in the personality measurements themselves; from failure to work with good operational definitions of a leader, and perhaps from a tendency to ignore low, but sometimes suggestive, relationships when they have been found. However, the problem seems now to be ripe for more fruitful investigation, both because the advance of personality research has made it possilbe to use measures of meaningful, factorially-independent, personality traits where previously personality has been measured only by ad hoc tests of unknown composition and validity, and by virtue of the growth of new concepts, as a result of broader experimental work, in group dynamics.

Since the recent theoretical developments and empirical test results in regard to the definition of unitary personality traits seem to be well known (5, 18) it is necessary to indicate advances only in the second matter, namely the revised concept of leadership measurement in the group dynamics setting. In a theoretical treatment we have suggested that there are always two distinct areas from which leadership measurements can be obtained: (1) measures of the internal group process and (2) measures of the total group performance or product. The former, by far the most common basis in past research reports, includes direct observations of the kind and channels of interaction, and also, less satisfactorily, retrospective and introspective sociometric reports. By contrast the "group performance" criterion of leadership, perhaps more frequently used in the hard realm of international politics, asks the question, "How well did this group perform under this leader?", and takes as a measure of leadership adequacy, a measure of group performances---usually corrected in practice by intuitive allowances for situational factors which are believed to be important.

The reluctance of some leadership researchers to shift to this second, "behavioristic" definition of leadership seems to be based largely on a theoretical or practical inability to separate the effectiveness of the group population from the effectiveness of the leader, as they contribute to the given performance. This difficulty vanishes completely in theory and largely in practice as we develop methods of measuring the syntality

of the group with reference to which the leadership occurs.

b If the characteristics of a group are measured along independent dimensions, as suggested in a recent research (2, 5), we obtain a profile of what may be called the group syntality---the dimensions of group behavior. This measurement of syntality permits a precise statement---in terms of change on syntality dimensions---of the way in which a group changes under the impact of a new situation, internal organization, or leader. It is proposed then that the proper "behavioristic" definition of a leader should be in terms of the extent of his influence upon each of the relevant dimensions of the group syntality (7).

With regard to the designation as apart from the measurement of leadership, there appear, correspondingly, to be two criteria, not always consciously distinguished. On the one hand the leader is taken as the person who occupies a given status in the group. He may occupy this either by election from the group or appointment from outside the group, but in either case he is presumed to be the person who performs certain acts including generally, that of giving directions to, and serving as spokesmen for, the group. On the other hand the leader is taken as the person, whatever his formal status, whose behavior has significant influence upon what the group does or how it does it. Too often, it would seem, studies of leadership have failed clearly to recognize this distinction. Much of the more consistency (as distinct from validity), and some of the resulting prestige, enjoyed by sociometric ratings of leadership resides circularly in the simple fact that group members could agree upon which members held the position of "leader", while the inconsistencies between this and the attempts to evaluate leadership in terms of group productivity is evidently due to a low correlation between actually influential behavior and formal leadership status.

In the present paper we plan to examine leadership in a way which has not been done before, namely, by considering it in the content of many diverse measures of group performance, resolved into syntality dimensions. This was made possible by an Office of Naval Research study on 100 groups of 10 men each, the results of which, as far as the group measurements are concerned, has already been presented in more detail elsewhere (8, 9).

The findings to be described here are those based, on the one hand, on the measurement of individuals in terms of well defined personality factors and on the other upon defined groups performing in standardized situations. In this way it was possible to obtain a number of measurements of leadership with a degree of uniformity and objectivity which has perhaps seldom been possible in the past. The theoretical analysis of leadership designation and measurement along the lines indicated above, has been set out in detail elsewhere (6, 7). Here we shall deal with a particular experiment exemplifying the principles there discussed.

2. Design of the Experiment

It was our aim to take a moderate size face-to-face group concerned with a variety of activities typical of those which groups of these sizes are commonly called upon to face. A greater degree of control over the selection of the populations and of the experimental conditions of group behavior was

exercised than has generally been possible in leadership observations. Thus the populations were composed of persons all of the same sex (men), of a fairly narrow age range (18-30) and chosen as not having known one another in such group life previously. Each of the 80 groups (20 of the 100 were dropped because of incomplete data) was in competition with the other groups for a considerable monetary prize ($100.00 to be given to the best group in each set of 10 groups). After the testing of the individual members who were to be in the group, by the personality tests, each group met for three sessions of three hours each during which it was called upon to perform a wide variety of activities, such as a construction task, a committee meeting, a jury-like decision-reaching situation, a code problem-solving situation, a discussion aimed to arrive at the common attitude and interest of the group on certain questions, and so on. The forty-four distinct performance measurements so obtained have been described fully elsewhere (8, 9). The measures when intercorrelated and factor-analyzed yielded about 16 group dimensions---13 of them sufficiently stable for measurement---on each of which each group had a measurable value.

The observations made on the group during its performances covered not only the measurements of time and errors in the various total group activities, but also observations by two observers in a great variety of interactions within the group, sociometric reports by members of the group on their designated (elected) leaders, together with the circumstances under which they were elcted. Owing to a shortage of computational resources it has not yet been possible to classify the groups according to their standing on the 13 syntality dimensions. Thus, no direct measures of leadership in terms of influence on these dimensions are available, though the observers' rating and interaction data on the influence exerted by an individual on the group is available to be used as a short cut to the same principle. These observers, working under standardized, repeated conditions observed the effects of the various members of the group upon the behavior and performance of the group, and they recorded each group-influencing act, tagging it with the number of the person who made it. Secondly, after the first session of three hours in which no formal leader was specified, the group were invited to select a leader from among their members. In every case they chose to do so. Three times during the course of the second meeting and again at the end of the meeting they were asked to hold elections to decide who would serve as leader for the next activities. In all cases they were permitted to re-elect their contemporary leader or to select a new one.

These represent two extremes, as it were, of the possible leadership observation. But the full rostra of experimentally independent leadership evaluations made in the course of these experiments admit intermediate grades. Those to be reported in this paper are:

1. "Problem-Solving Leadership" (252)[1].

   Each observer (there are two, in general) immediately after each situation checked, in a mimeographed form, the code name for each group member who had at any time in the course of the situation been observed to have had a significant influence upon the group.

1. The number in parentheses following each title refer to the index number of the measurement in the master list of variables (9 p. 20-39) from which the score was computed.

The total number of checks (44 was the largest possible number) was computed for each member and finally the members were ranked in the group in terms of number of checks they received. Those with the most checks were ranked high in amount of leadership shown.

2. "Salient Leader" (253)

To be scored a leader in this category two observers had independently, and for the same situation to star the subject as being the most important leader in at least one of the twenty-two situations presented in the course of the three meetings. All subjects upon whom two observers had agreed at least once were taken as leaders. Since only one observer was used for the Great Lakes groups this measure could not be computed for them.

3. "Sociometric or Popular Leader" (112)

At the end of the final meeting all group members were asked to recall which of them had shown leadership in the course of the group meetings and to record their numbers in the order of importance of their leadership. Six blanks were provided.

In computing "leadership scores" by this criteria, the first blank was weighted 4 points, the second 3, and the third 2 and all remaining ones 1. The distribution of scores was then broken into "leaders" and "non-leaders" at what appeared to be the point of inflection between two modes in this distribution.

4. "Elected Leaders" (413)

Any person who was elected leader on one or more occasions was taken as a "leader" using this criteria.

To complete the description of the experimental work it is necessary only to describe how the individual personality measurements were made. Since the measurements could be made on cooperative subjects, and could be made before the actual group situations in which they might become rivals for leadership, it seemed reasonably safe to depend upon a pencil and paper questionnaire type approach, especially because no behavioral measures of the primary personality factors were available at the time the work began in 1947. Each subject was accordingly given both the A and the B forms of the 16 Personality Factor Questionnaire (4). This questionnaire is based upon a large scale factorization of items chosen to represent a wide range of personality responses and many areas of behavior (4, 5). It has been developed by various item-analytic purification technics and now measures 16 factors by either 20 or 26 questions each. These factors have been correlated with ratings and also with a number of other tests, such as the Humor Test (10), and the Music Preference Test (11). The factors, which are symbolized by letters of the alphabet represent such dimensions as emotional maturity versus neuroticism, cyclothymia versus schizothymia, surgency versus desurgency, high intelligence versus low intelligence, dominance versus submissiveness and so on. Although these factors are practically orthogonal in the original factorization, they have some moderate intercorrelations, ranging from .0 through +.4 in the questions by which they are now measured. The fact that this test was given to subjects in a slightly abbreviated form compared with the item total in the present standard

test, creates some slight difficulties in equating the raw scores with the norms for the standard published 16 P.F., but these difficulties can be overcome by suitable corrections, and in any case they do not affect the main findings. The subjects were exhorted to respond frankly and were assured that the responses would be kept private and would not influence their occupational or student standing.

3. The Experimental Population.

Although 80 groups, involving 800 men were used for the principal study, the present analysis of leadership behavior was worked out in only 34 of these groups including a total of 334 men. The discrepancy between the number of men and of groups is brought about by a few cases where the personality questionnaire was not filled out. Fourteen of the groups were composed of subjects who had just arrived (within 72 hours) at San Antonio, Texas to begin Officer Candidate School in the Air Force, and 20 of the groups were of subjects who had arrived (within 12 hours) to begin Boot Training at Great Lakes, Illinois.

4. Analysis of the Results.

The plan of analysis is a very simple one. First we will compare the profiles of leaders with non-leaders where leaders are chosen separately for each of the criterion described above. In this way we hope to discover which of the measured personality factors are significant, how far each is significant for leadership, and how it may be possible to weigh the significant factors in order to produce a pattern measurement distinguishing leaders from non-leaders.

We will then compare the four profiles of leaders in order to discover what if any relation exists between the method of selection and the personality characteristics of the resulting selectees.

The results in terms of mean scores for all criteria of leadership are shown in table 1,

Table 1.

Mean 16 P.F. Scores for Leaders and Non-Leaders*

	Criterion 1: "Problem Solvers"				Criterion 2: "Salient Leaders"			Criterion 3: "Socio-metric Leaders"			Criterion 4: "Elected Leaders"		
	High	Middle	Low	d	L	NL	d	L	NL	d	L	NL	d
A	17.8	17.9	17.5	.3	18.3	19.7	-1.4	17.1	17.9	- .8	18.6	17.4	1.2
B	11.4	10.4	9.7	1.7	12.5	11.7	.8	10.4	10.5	- .1	10.9	10.3	.6
C	35.1	34.1	33.6	1.5	36.1	34.2	1.9	34.6	32.9	1.7	34.8	34.0	.8
E	25.6	24.4	24.0	1.6	27.0	26.0	1.0	26.8	24.5	2.3	25.2	24.4	.8
F	26.9	25.6	25.0	1.9	26.1	26.2	- .1	25.6	25.9	- .3	26.4	22.5	3.9
G	22.1	21.0	20.6	1.5	22.4	21.3	1.1	21.7	21.1	.6	22.4	20.8	1.6
H	36.7	33.3	32.9	3.8	39.8	35.8	4.0	36.2	34.1	2.1	36.6	32.2	3.4
I	9.8	10.7	10.7	- .9	9.8	10.6	- .8	10.4	10.4	.0	10.0	10.6	- .6
L	18.1	18.6	18.4	- .3	16.8	17.8	-1.0	17.3	18.5	-1.2	17.9	18.6	- .7
M	19.0	20.1	20.1	-1.1	18.6	19.8	- .8	19.7	19.7	.0	18.6	20.2	-1.6
N	21.9	20.4	20.6	1.3	23.0	22.2	.8	22.1	20.8	1.3	21.4	30.7	.7
O	13.3	15.4	16.2	-2.9	11.3	13.6	-2.3	13.9	15.0	-1.1	13.0	15.9	-3.9
Q_1	19.9	20.3	18.8	1.1	21.5	21.2	.3	20.4	19.7	.6	19.7	19.8	.1
Q_2	14.1	14.1	14.7	- .6	15.9	14.5	1.4	15.7	14.0	1.7	13.6	14.6	-1.0
Q_3	25.8	24.3	23.2	2.6	26.7	24.6	2.1	25.8	24.3	1.5	26.0	23.6	2.4
Q_4	14.7	16.3	16.4	-1.7	12.0	15.0	-3.0	14.6	16.0	-1.4	14.7	16.0	-1.3
No. of Cases	90	140	90		43	100		39	271		92	233	

*d's significant at the 5% level are underlined.

Those significant at the 1% level are double underlined.

the actual critical ratios for differences that were found to be significant in table 2, and

Table 2.

Significant Personality Differences Between Leaders and Non-Leaders for Four Criteria of Leadership.

	1. Problem solving Leaders	2. Salient Leaders	3. Sociometric Leaders	4. Elected Leaders
A				
B	4.2			
C		2.2		
E			3.1	
F	2.5			4.6
G	3.1			3.6
H	3.1	3.4		3.2
I				
L				
M				-2.5
N			1.9	
O	-2.2	-2.4		-2.7
Q_1				
Q_2			2.4	
Q_3	3.4	2.2	2.0	2.1
Q_4		-2.2		

Note: 1. Differences are reported as Critical Ratios. Only differences which are significant at or beyond the 5% are shown.

2. The negative sign preceding a C. R. indicates that the leader score mean is lower than that of the non-leader mean.

the size of the differences in terms of standard score units are plotted in Graph 1.

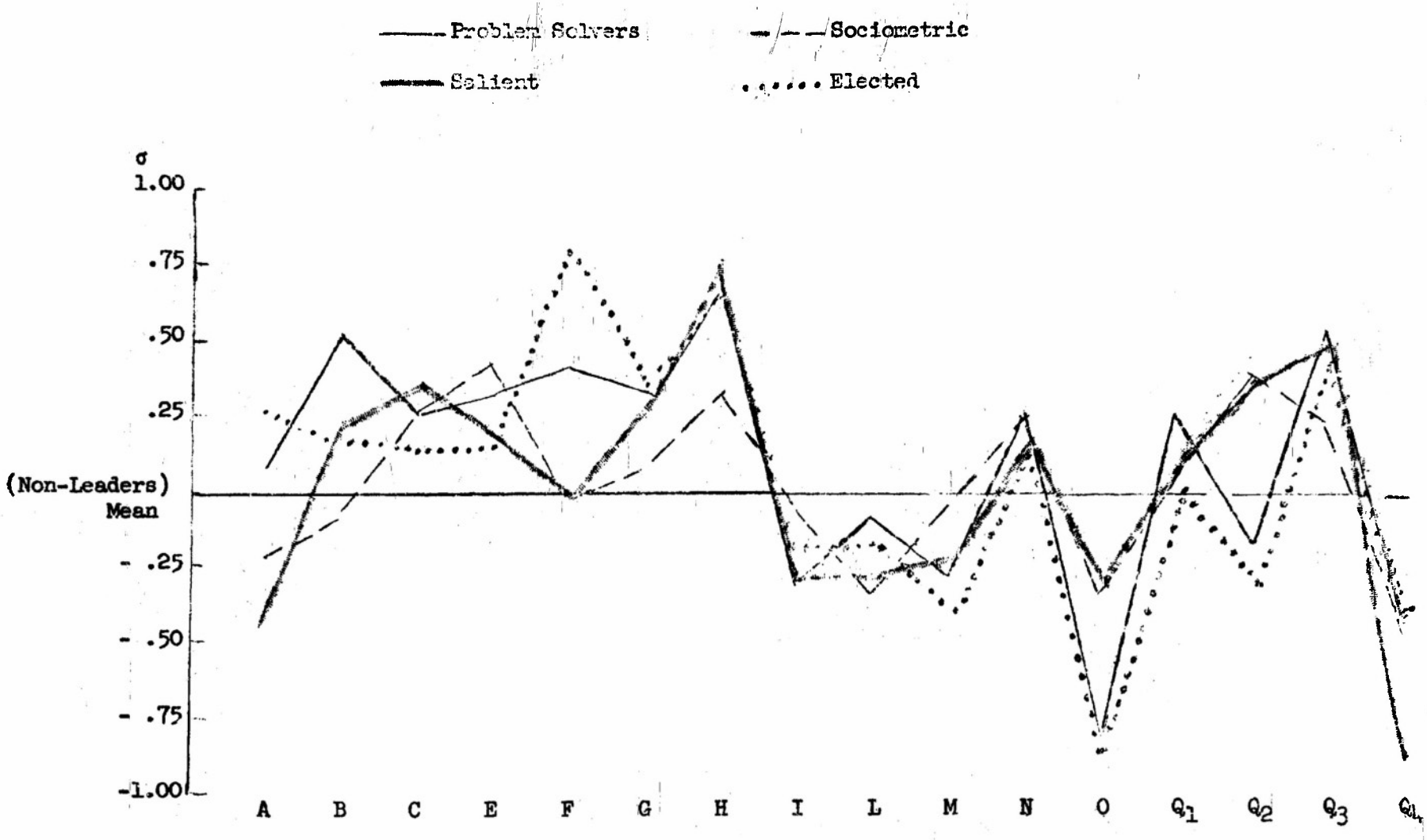

Figure 1.

Differences (Z-score) between the mean scores for various kinds of leaders and non-leaders on the 16 Personality Factor test.

Note: the straight line at 0.00σ indicates the mean score for non-leaders

It will be seen at once that a number of differences exist which are significant at the 5% (C.R.=1.96) and at the 1% (C.R.=2.58) level of confidence, and that in most cases there is a tendency for the same personality factors to show differences for each of the four different criteria of leadership. Personality factors showing differences in the same direction for all four criteria are:

Factor C Emotional Maturity or Ego Strength
E Dominance
G Character Integration or Super Ego Strength
H Adventurous Cyclothymia
N Polished Fastidiousness
O (-) Absence of worrying anxiousness (free anxiety)
Q_3 Deliberate will control
Q_4 (-) Absence of nervous tension (somatic anxiety)

On the other hand special criteria of leadership selectively emphasize some factors (e.g., B, E, F, and O) much more than other criteria, and in the case of factor A and Q_2 there are even differences in what is the predisposing direction of endowment for leadership according to the concept of leadership used.

From what has been established about the nature of these personality factors in personality research generally, it is comparatively easy to see why these particular dimensions of personality should have such significant relations with leadership.

In regard to the three most consistently differing factors---H, O, Q_3---which are generally near or well beyond the 5% level of certainty, the explanation is clear enough. The timid, withdrawn and hesitant behavior associated with H- would certainly mitigate against leadership. The anxious worrying cautiousness in dealing with people associated with O+ would not inspire confidence from others. The absence of the will characters, the stability of purpose, and organizational precision associated with Q_3 would not permit a person of otherwise suitable temperament to see his decisions through and to organize the group with consistency and planfulness.

The fourth factor which is demanded in all forms of leadership and which reaches levels of significance almost equal to the above is G, or super-ego strength. In so far as conscience may be said to be the "will of the group,"---a regard for superpersonal values---the selection of leaders with high G represents a dynamic gain for the group.

In discussing next those factors which differ appreciably for the different forms of leadership, it is necessary to review in some detail the differing conditions of selection. The reader may be reminded that the four categories of leaders (p. 7 above) are, (1) those observed to give most "leadership act" interaction with the group, These we might call "problem solvers;" (No. 1 (252) above; p. 3) (2). Those noted by observers to be most influential on special occasions in affecting a group performance (No. 2 (253) above; p. 4). These we might call "salient leaders;" (3). Those reported by group members in retrospective checking to be leaders. These we shall call"sociometric leaders," (No. 3 (112) above; p. 4) and;

(4) those actually elected by the groups as leaders in the election situations. These are simply "elected leaders" (No. 4 (413) above; p. 4). The significant differences between kinds of leaders is presented in table 3.

Table 3.

Critical Ratios found between the mean personality trait scores for leaders selected by different criteria.

	Method of Selection					
	1-Problem Solving	2=Salient			3=Sociometric	4=Elected
Personality Trait	Paired Differences:	1:2	1:3	1:4	2:3	2:4	3:4
A		(1.60)			(1.5)	2.1	(1.8)
B		2.3	3.2	2.7			
C							
E					(-1.5)		(1.7)
F		2.6	2.7	-2.6		-5.0	-5.0
G							
H							
I							
L							
M							
N							
O							(1.7)
Q_1							
Q_2		-2.3	-2.7			2.8	3.2

Table 3. (contd.)

Personality Trait

Q_3

Q_4

Note: 1. All critical ratios which reach the 15% level of significance (1.46) are shown in this table. It will be recalled that a C.R. of 1.96 is significant at the 5% level and 2.58 at the 1% level.

2. A minus sign preceding the C.R. indicates that the left hand (lower numbered) criteria has a lower mean (table 1.).

For the selection of Problem Solvers (leader type 1), judged by the "quantity of observed leadership," a high score is dependent upon the frequent appearance, at least momentarily, of influential behavior in a wide variety of situations, but not necessarily a large amount, nor continuing influence in any one situation. Thus, it makes good sense that here the level of general ability (factor B) shows more discrimination of problem solvers than of other leaders. Similarly, the spontaneous fluency of ideation and impulsiveness associated with Surgency (factor F) could lead to frequent bits of influential behavior, while the driving, persistent, group-concernedness associated with the super-ego-like Character Integration factor (G) would be expected to show a significant association through interest in the problems of the group.

Criterion 2, "Salient leadership," on the other hand was meant to select the people who in at least one specific situation evidenced reasonably clear and persistent leadership: these people were not merely influential, but the "most influential" for the whole situation. The predominant influence had moreover to be reasonably clear, in order for the two observers to agree upon it. Since leadership by this criterion must have involved stepping into and holding the center of attention for fairly long periods of time, it is not surprising that it is here that the separation is greatest for the adventurousness-shyness (H) factor and significant for both of the measures of anxiety (O and Q_4). It is perhaps surprising that the dominance (E) difference is not more marked, at least if we give any heed to one popular, over-simplified view which immediately associates dominance and leadership.

The sociometric criterion, consisting of weighted retrospective reports of leadership is more similar in pattern to criterion 2 than to the others, indicating, we believe, a close correspondence between the salient and the sociometric definition of leadership (see table 3). It would appear, however, that the group member, in recalling his leaders was more influenced by dominance behavior (E), and less by adventurousness (H), and the "anxious, worrying, apprehensiveness" measured by factor O than are observers on the lookout for behavior which influences what the group does. Furthermore, it should be noted that there is essentially no difference between the level of ability for leaders and non-leaders as selected by this criterion. If, as we have supposed, the intelligence measure can be taken as a rough index of

effectiveness in problem solving and the influencing of group behavior, then we are led to the interesting hypothesis that the sociometrically selected leader is not so much influential as he is attention-getting and dominating. He is the person who is recalled as having captured the group members attention, but he is not necessarily the person who did the things which were decisive with regard to the course of the group's progress.

Turning last to the elected leader we notice that the chief way in which they differ from leaders by other criteria is on factor F, surgency. It is particularly remarkable that while a high endowment on this trait is useful in securing election, it bears almost no relation to who is selected when the group member is asked to recall "Whom do you judge to have been the leaders of this group throughout these meetings?" Indeed if we could partial out the responses to this question which simply listed the elected leaders, it might be that by the sociometric criteria, the low F person is in fact recalled as exercising more influence.

While the differences between leaders and non-leaders in factors A and Q_2 (Friendly cyclothymia and Independent self-sufficiency) are not significant, some of the differences between leaders selected by the different criteria are. Thus, it would appear, the warm friendly characteristics associated with A+, and the willingness to go with the group and obtain major dynamic gratification from interpersonal stimulation that are associated with Q_2 (-) make for election and for group influential behavior over a wide spectrum of situations. But, to an even greater extent the persistance in inner principles and lack of concern for the wishes of peers associated with A- and Q_{2+} (perhaps well illustrated by Woodrow Wilson) appears to be associated with Criteria 2 and 3.

These differences call for further examination in terms of (a) the relative satisfaction which group members received from the A-, Q_{2+}, in comparison with the A+, Q_{2-} leader, and (b) the dimensions of syntality that are altered by the two types of leaders. In the absence of further analysis of data we would hypothesize that the A-, Q_{2+} leader will in the long run, because he will be more successful, prove more popular in groups where the primary problem is to attain a difficult goal, but less successful and popular in groups and situations where the means of goal attainment are simple but the maintenance of contentment and morale of members is difficult. Similarly the A-, Q_{2+} leader will probably have his greatest effort upon the syntality dimensions related to group performance while the other will more likely influence the dynamic and interactional dimensions of structure and behavior.

While no direct measurement of the effect of leadership upon group productivity is as yet available, it does seem probable, to us, that the observer ratings, in particular Criterion 2, will more closely reflect changes in productivity. Extrapolating from this assumption and by reference to Diagram 1, we may predict that the leader who had greatest influence upon the syntality of the group, will characteristically be much more adventurous (H+), less anxious (Q_4- and O-), more emotionally mature (C+), and more persistant and willful (Q_3+) than the typical member of the population from which he is drawn.

5. Summary

1. Basically there are two ways of designating and measuring leaders: (a) by interaction observations, and, (b) by syntality change observations.

2. Although (b) is not yet fully practicable we have taken four operational definitions of leadership which range from (a) toward (b) and measured the personalities of individuals picked out by each, contrasting them with one another and with non-leaders.

3. The experimental situation was one in which 34 groups of 10 young men in each performed for 3 sessions of 3 hours each in a wide variety of common small group performances (e.g., committee decisions, construction, tug-of-war, cryptogram solving). The 13 syntality dimensions, factored out of 150 measures of external behavior and internal, structural, interactional observations, were not directly used here.

4. The four leadership categories may be designated:-

(i) Persistent momentary problem solvers, picked for frequency of brief acts of leaders. The equivalent of these in a role-structured group would probably be the "technical leaders." This is an interaction count. This comes near to defining the leader by his persistent influence on syntality.

(ii) Salient leaders picked by outside observers as most powerfully influencing the group syntality on at least one total situation and occasion. This, like (i) above, comes near to designating leaders by group performance.

(iii) Sociometric leaders, picked by frequency of subjectively reported perception of leadership by group members. This is a objective, sociometric rather than a behavioral, interactional source of evidence on structure, and has nothing demonstrable to do with syntality change.

(iv) Elected leaders, picked by voluntary election after experience. A structural measure interactionally based.

5. Comparing leaders with non-leaders differences significant at the 1% and 5% level were found for factors G, O, H, and Q_3 (for leaders +.-, +, and +). These, and lesser differences on factors C, E, N, and Q_4, are in the same direction for all four classes of leaders.

6. In terms of the number of significant critical ratios, the greatest resemblance exists between salient and sociometric leaders and the least between sociometric and elected leaders.

7. The differences between leader types which have a significance at the 5% level or beyond are that Problem Solvers are higher in General Intelligence, and Elected Leaders are higher in Surgency.

8. Four formulae, in the form of optimum factor patterns may be gathered from the above tables, for selecting leaders according to these four conceptions. Any of these can be put alternatively into specification equation form, in order to utilize the 16 P.F. measures to give a simple prediction of leadership effectiveness. We have chosen to illustrate this by the

"Elected Leaders" pattern, for this is probably of widest practical application. From the above differences of means, bi-serial correlations were worked out for each personality factor in relation to leadership. (As McNemar, for example, points out, the assumption that the dichotomized variable is continuous generally makes best sense, and it certainly does in this case where we are aiming to predict a continuous variables of "fitness for leadership" which may be cut at any point according to the number of leaders required from the given population.)

The equation works out at:-

$$P_L = .16_A + .11_B + .09_C + .10_E + .50_F + .22_G + .35_H - .13_I - .10_L - .21_M + .09_N - .27_O - .16_{Q_2} + .30_{Q_3} - .28_{Q_4}$$

Using this as a specification equation assumes that the factors are uncorrelated (this is true for the ideal personality factors but only approximately true for the present means of measuring them---The 16 P.F. Questionnaire---), and that linear relations exist between the criterion and the personality factor endowments. This is a pretty potent specification equation, perhaps because it covers so wide an array of personality aspects: for it accounts for 82% of the variance of the criterion and gives a multiple correlation of .91. It remains to be seen how well this will stand up to cross validation with other groups; and when more refined measures eliminate the over-determination introduced by the neglect of slight correlations between the factors mentioned above, but as it stands it appears the highest prediction of leadership that we have encountered in the literature.

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